

REMARKS

Claims 22-44 are currently pending in this application.

At page 2 of the Office Action, correction of a typographical error in claim 29 has been requested. Applicants have amended claim 29 to correct the spelling of "Re-etherisation" to "re-etherification". No new matter has been added to the application by this correction. Therefore Applicants respectfully request that the rejection be reconsidered and withdrawn.

At pages 2-3 of the Office Action, claims 25-31 and 43 have been rejected under 35 U.S.C. §112, second paragraph, for indefiniteness. Claim 25 allegedly lacks antecedent basis for the phrase "C₃ to C₆ alcohols" on page 9, line 5. Applicants have amended claim 25 to clarify that salts that have been formed can be separated while maintaining a pH value of 7 to 10 by dissolving the melt of the amino triazine ethers at 70 to 150°C in 70 to 150 mass% (in relation to the amino triazine ethers) of C₃ to C₆ alcohols. The prior language seems to be the result of an error in translation from the original German application. Applicants have amended claim 25 accordingly, which provides antecedent basis for the phrase "C₃ to C₆ alcohols". No new matter has been added by this amendment.

It is alleged that claim 43 is indefinite because it recites several components in both broad and narrower recitations. Claim 43 has been amended to delete the narrower embodiments, without prejudice to the broad recitations encompassing the narrower embodiments.

Accordingly, Applicants respectfully request that the §112 rejections be reconsidered and withdrawn.

Claims 22-24 and 32 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,206,066 ("Horacek"). With respect to claims 22 and 23, it is alleged that Horacek teaches an amino resin molding composition (col. 3, lines 46-48) comprising polytriazine ethers (1:6) comprising triazine segments that have been partly etherified with alkanols/R₃ (2:7-13) and polyether diols/R₄ (2:40-42) where the triazines are combined through bridging members that are polyethers/-NH-CHR₂-O- R₄-O-CHR₂-NH- (2:40-42), or formaldehyde/-NH-CHR₂-NH- (2:7-11), wherein the molar ratio of the substituents R₃:R₄ are 20:1 to 1:20 (1:45-55), the proportion of the combination of the

triazine segments through the polyethers being from 5 to 95 mole % (1:50-55). The rejection acknowledges that Horacek does not teach the number of nuclei as being in the claimed range, but argues that it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the desired number of nuclei and the motivation to do so would have been to scale the reaction to the desired size, citing Manual of Patent Examining Procedure §2144.04. With respect to claim 24, it is alleged that Horacek teaches the polytriazine ethers being made from a formaldehyde condensation/ $R_2=H$ (2:7-15). With respect to claim 32, Horacek allegedly teaches the composition of claim 23, as shown above, and making a laminate from the composition (3:55-57).

Also, claims 33, 34 and 38 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek. With respect to claim 33, the rejection alleges that Horacek teaches an amino resin molding composition as discussed above and making a resin laminate from the composition (3:55-57). With respect to claim 34, Horacek allegedly teaches a prepeg/semi-finished product produced from fibers (3:27-32). With respect to claim 38, Horacek teaches fiber reinforcement that are glass, carbon or aramid fibers (3:16-20).

Applicants respectfully traverse the §103(a) rejections and request that the rejections be reconsidered and withdrawn.

As reiterated by the Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, 82 U.S.P.Q.2d 1385 (2007), the framework for the objective analysis for determining obviousness under 35 U.S.C. §103 is stated in *Graham v. John Deere*. Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg., No. 195 (October 10, 2007) at page 57527 (hereinafter "Examination Guidelines"). The factual inquiries enunciated by the Court are as follows:

- (1) Determining the scope and content of the prior art;
- (2) Ascertaining the differences between the claimed invention and the prior art; and
- (3) Resolving the level of ordinary skill in the pertinent art.

Examination Guidelines at page 57527.

Horacek teaches a molar ratio of melamine:formaldehyde:alkanol of:

1: (5-6) : (4-6) (see claim 1 and column 1, lines 45-49, 56-63). Claim 22 of the present application, however, has a ratio of melamine:formaldehyde of 1:2.5 to 1:3.5 (see claim 22 and page 17, second paragraph of the description). Example 1 of the instant application teaches a ratio of melamine:formaldehyde:methanol of 1:3.5:14. Example 2 of the present application shows a relation of aminotriazine:aldehyde of 1:3. These molar ratios fall outside of the ranges given in Horacek.

The teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

Claims 23, 24, 32-34 and 38 depend directly or indirectly from claim 22 and are distinguishable from the cited prior art for the same reasons as those discussed above with respect to claim 22.

Therefore, Applicants respectfully request that the §103(a) rejection of claims 22-24, 32-34 and 38 over Horacek be reconsidered and withdrawn.

Claims 25, 26 and 30 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek in view of Pinschmidt, Jr. et al. (U.S. Patent No. 5,519,093), Reinhardt et al. (U.S. Patent No. 3,859,334), Laganis et al. (U.S. Patent No. 4,261,873), Tsukiyama et al. (U.S. Patent No. 6,818,729), and Dorries et al. (U.S. Patent No. 4,535,031).

With respect to claim 25, Horacek allegedly teaches a process for producing an amino resin molding composition as discussed above with respect to claim 22, comprising the step of etherifying triazines with formaldehyde (2:7-11) through conversion with C₁-C₈ alcohols in a weak acid medium at 20 to 150°C and atmospheric pressure (2:12-13) wherein the melt of amino triazine ethers are present in a 70 to 150 mass percent in relation to C₃ to C₆ alcohols (1:45-55), evaporating the unreacted alkanols (2:13-15); reacting the triazine derivatives with diols of the type HO-R₄-OH (2:26-42), where the reaction product contains 70 mass % C₅-C₁₈ alcohols (1:52-55) at 60 to 25°C and atmospheric pressure (4:47-53), wherein the triazines are present in a 20:1 to 1.1:1 ratio (1:45-55) and cured/further condensed at 140 to 220°C (3:48-54). As above, the rejection acknowledges that Horacek does not teach the number of nuclei as being in the claimed range, but contends that it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the desired number of nuclei and the motivation to do so would have been to scale the reaction to the desired size.

In addition, the rejection acknowledges that Horacek does not teach separating salts from the mixture, but asserts that Pinschmidt, Jr. et al. teaches removing the salts (5:23-28) from a mixture at a pH value of 7 to 10 (7:9-10) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have removed any salts from the mixture of Horacek as in Pinschmidt, Jr. et al., and the motivation to do so would have been, as Pinschmidt, Jr. et al. suggests, to allow the polymer to be ready to be crosslinked (5:30-31). Horacek and Pinschmidt, Jr. et al. allegedly are combinable because they are each concerned with the same field of endeavor, namely amine polymers.

The rejection also acknowledges that Horacek does not teach cooling the mixture and removing insoluble material. However, Reinhardt et al. allegedly teaches cooling formaldehyde containing mixture to room temperature/15 to 40°C and removing the precipitate (6:24-27) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the cooling step of Reinhardt et al. in the process of Horacek, and the motivation to do so would have been, as Reinhardt et al. suggests, to remove free formaldehyde from the mixture (3:45-49). Horacek and Reinhardt et al. are allegedly combinable as they are concerned with the same technical difficulty, namely formaldehyde solutions.

The rejection acknowledges that Horacek does not teach reducing the alcohol content to 5 to 20 mass percent, but cites Laganis et al. as teaching an aminoplast resin with 5 to 20 mass percent alcohol (16:12-13), alleging that it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the alcohol content of Laganis et al. in the process of Horacek and the motivation to do so would have been, as Laganis et al. suggests, that the alcohol will act as a solvent (16:12-13). Horacek and Laganis et al. allegedly are combinable as they are concerned with the same field of endeavor, namely aminoplast resins.

The rejection further acknowledges that Horacek does not teach reacting the diol and resin for the claimed time. However, Tsukiyama et al. allegedly teaches reacting a melamine resin with a diol for 1 to 60 mm (4:55-59), and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have reacted the reactants for the amount of time of Tsukiyama et al. in the process of Horacek, and the motivation to do so would have been, as Tsukiyama et al. suggests, this time will produce the desired resin (4:58-59). Horacek and Tsukiyama et al. allegedly are combinable as they are concerned with the same field of endeavor, namely melamine formaldehyde resins. The rejection acknowledges that Horacek does not teach the curing as taking place for 2 to 12 minutes, but asserts that Dorries et al. teaches curing an aminoplast for 2 to 12 minutes (15:14-29) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have cured the resin for the time in Dorries et al. in the process of Horacek, and the motivation to do so would have been, as Dorries et al. suggests, to give a well cured product (15:18-20 and 15:26-29). Horacek and Dorries et al. allegedly are combinable as they are concerned with the same field of endeavor, namely aminoplast resins.

With respect to claim 26, Horacek allegedly teaches using an organic acid as a catalyst (3:11-15). With respect to claim 30, Horacek allegedly teaches using different initial products in the condensation (2:26-42).

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

As discussed above, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking

and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Pinschmidt Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al. and Dorries et al. do not remedy this deficiency.

Pinschmidt Jr. et al. does not disclose triazine resins. The removal of salts from the reaction mixture is not a decisive step of the instant invention.

Reinhardt et al. does not concern melamine, but discusses a method to remove free formaldehyde from a solution of methylol carbamate. Moreover, the reaction of Reinhardt et al. is conducted under acidic conditions ($\text{pH} < 7$, see column 5, lines 15 to 17). The instant invention teaches the optional removal of salts under basic conditions ($\text{pH} 7-10$).

The polyester compounds and enamels of Laganis et al. may contain melamine between 5-20%. The melamine resins mentioned in Laganis et al., however, have a distinctly different structure compared to those of the instant invention.

The mixtures described in Tsukiyama et al. are merely physical mixtures of verified melamine resins and polyethylene glycols, which do not react chemically but - if at all - in the last step of hardening. They are not comparable to the resins of the instant invention.

Dorries et al. discusses the production of melamine-formaldehyde resins as they are known in the state of the art. A curing step of resin itself is not shown. The curing

step, reference to which is made in the Office Action, concerns the ready made prepreg compound.

Therefore, Applicants respectfully request that the §103(a) rejection of claims 25, 26 and 30 be reconsidered and withdrawn.

Claim 27 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek in view of Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. as applied to claim 25 above, and further in view of Recker et al. (U.S. Patent No. 4,336,180) as evidenced by Kloeppel, Synthetic Molecular Sieves Binds Water Better than Zeolites.

With respect to claim 27, it is alleged that Horacek, Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. collectively teach the method of claim 25 as shown above, but Horacek does not teach adding a molecular sieve to the process. However, Recker et al. allegedly teaches forming a resin in the presence of a molecular sieve (3:18-1 9) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used molecular sieving in the method of Horacek as in Recker et al., and the motivation to do so would have been, as evidenced by Kloeppel, to absorb moisture from the etherification reaction (112). Also, although Recker et al. does not explicitly teach the amount of molecular sieving as being in the claimed range, it allegedly would have been obvious to a person having ordinary skill in the art at the time of the invention to have optimized the range to achieve the best results, citing MPEP §2144.05.

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

Claim 27 depends from claim 25 and is distinguishable from the cited combination of Horacek in view of Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. further in view of Recker et al. as evidenced by Kloeppel for the same reasons as are set forth above.

As discussed above with respect to claim 25, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e., dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Pinschmidt Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al. and Dorries et al. further in view of Recker et al. as evidenced by Kloeppel, taken alone or in combination, do not remedy this deficiency.

Therefore, Applicants respectfully request that the §103(a) rejection of claim 27 be reconsidered and withdrawn.

Claims 28 and 29 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek in view of Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. as applied to claim 25 above, and further in view of D'Alelio (U.S. Patent No. 3,053,797).

With respect to claims 28 and 29, Horacek, Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. allegedly teach the method of claim 25 as shown above, but Horacek does not teach the re-etherification as taking place at temperatures as claimed. However, it is alleged that D'Alelio teaches the polymerization re-etherification as taking place at temperatures of 100-250°C (12:55-59) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the temperature of D'Alelio in the method of Horacek, and the motivation to do so would have been to increase the reaction rate.

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

As discussed above with respect to claim 25, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Pinschmidt Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al. and Dorries et al. further in view of D' Alelio, taken alone or in combination, do not remedy this deficiency.

Therefore, Applicants respectfully request that the §103(a) rejection of claims 28 and 29 be reconsidered and withdrawn.

Claim 31 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek in view of Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. as applied to claim 25 above, and further in view of Williams, Amino Resins.

With respect to claim 31, Horacek, Pinschmidt, Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al., and Dorries et al. allegedly teach the method of claim 25 as shown above, but Horacek does not teach the process as taking place in a single reaction instillation. However, Williams allegedly teaches making an amino resin in a single unit (Section 4). The Office Action asserts that it would have been obvious to a person having

ordinary skill in the art at the time of the invention to have used a single reaction instillation in the process of Horacek as in Williams, and the motivation to do so would have been, as Williams suggests, it is a functional alternative to non continuous processes (Section 4).

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

As discussed above with respect to claim 25, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Pinschmidt Jr. et al., Reinhardt et al., Laganis et al., Tsukiyama et al. and Dorries et al. further in view of Williams, taken alone or in combination, do not remedy this deficiency.

Therefore, Applicants respectfully request that the §103(a) rejection of claim 31 be reconsidered and withdrawn.

Claims 35-37 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek as applied to claim 33 above, and further in view of Recker et al. as evidenced by Kloeppel, Synthetic Molecular Sieves Binds Water Better than Zeolites.

With respect to claims 35-37, Horacek allegedly teaches the product of claim 1 as stated above, but not adding a molecular sieve to the product. However, Recker et al. teaches forming a resin in the presence of a molecular sieve (3:18-19). Horacek and Recker et al. are combinable as they are concerned with the same field of endeavor, namely resins, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used molecular sieving in the product of Horacek as in Recker et al., and the motivation to do so would have been, as evidenced by Kloeppel, to absorb moisture from the etherification reaction (§2).

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

As discussed above, Horacek teaches a molar ratio of melamine:formaldehyde:alkanol of: 1: (5-6) : (4-6) (see claim 1 and column 1, lines 45-49, 56-63). Claims 35-37 depend indirectly from claim 22. Claim 22 of the present application, however, has a ratio of melamine:formaldehyde of 1 : 2.5 to 1 : 3.5 (see claim 22 and page 17, second paragraph of the description). Example 1 of the instant application teaches a ratio of melamine:formaldehyde:methanol of 1 : 3.5 : 14. Example 2 of the present application shows a relation of aminotriazine:aldehyde of 1:3. These molar ratios fall outside of the ranges given in Horacek.

Also as discussed above, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36). ‘

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-

condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Recker et al. as evidenced by Kloeppel, taken alone or in combination with Horacek, do not remedy this deficiency.

Therefore, Applicants respectfully request that the §103(a) rejection of claims 35-37 be reconsidered and withdrawn.

Claims 39-42 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek, in view of Dorries et al. and Goldsworthy et al. Composites, Fabrication.

With respect to claim 39, Horacek allegedly teaches an amino resin molding composition as discussed above with respect to claim 22. Although the number of nuclei is not explicitly taught, the weight percentages allegedly could easily be manipulated to give the desired numbers. Horacek allegedly also teaches melt impregnating of fibers (3:27-32) at mass temperatures of 105 to 260°C (3:39-46) and melt impregnating component blanks (3:27-32).

Horacek does not teach the curing as taking place for 2 to 12 minutes, however, allegedly it would have been obvious to a person having ordinary skill in the art at the time of the invention to have cured the resin for the time in Dorries et al. in the process of Horacek, and the motivation to do so would have been, as Dorries et al. suggests, to give a well cured product (1 5:18-20 and 15:26-29).

Horacek does not teach the melt impregnating as being preformed according to one of the claimed techniques, however, Goldsworthy et al. allegedly teaches making a product through pultrusion (Section 3.1) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the pultrusion of Goldsworthy et al. in the process of Horacek, and the motivation to do so would have been, as Goldsworthy et al. suggests, making the articles in a one step process (Section 3.1).

With respect to Claim 41, Horacek allegedly teaches the polytriazine ethers being made from a formaldehyde condensation/R2H (2:7-15).

With respect to Claim 42, Horacek allegedly teaches using p-toluene-sulphonic acid as a hardening agent (3:11-15).

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

Similarly as discussed above with respect to claim 25, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e., dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Dorries et al. and Goldsworthy, taken alone or in combination with Horacek, do not remedy this deficiency.

Therefore, Applicants respectfully request that the §103(a) rejection of claims 39-42 be reconsidered and withdrawn.

Claim 43 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek, in view of Dorries et al. and Goldsworthy et al. Composites, Fabrication, as applied to claim 39 above, and further in view of Yagi et al. (U.S. Patent No. 5,624,627), Getchell et al. (U.S. Patent No. 3,982,410) and Marco et al. (U.S. Patent No. 5,856,313).

With respect to claim 43, Horacek, Dorries et al. and Goldsworthy et al. allegedly collectively teach the process of claim 39 as claimed above, but Horacek does not teach mixing the melt with a dispersion agent. However, Yagi et al allegedly teach mixing a resin and a paraffin oil (10:10-13) in a melt kneader at a temperature of 160 to 220°C

(10:37-47) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have mixed a dispersion agent into the resin as in Yagi et al. in the process of Horacek, and the motivation to do so would have been, as Yagi et al. suggests, to increase the processability of the resin (1:51-64).

The rejection acknowledges that Horacek does not teach treating the resin with an acid gas, but cites, Getchell et al. as teaching treating a polymer fiber mixture with an acid gas (10:50-54) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the acid gas of Yagi et al. in the process of Horacek, and the motivation to do so would have been, as Yagi et al. suggests, to fix the polymer in the fiber (9:47-50). Horacek and Getchell allegedly are combinable as they are concerned with the same technical difficulty, namely impregnating fibers.

The rejection also acknowledges that Horacek does not teach the mixture as being conveyed through a sieve separator, however, Marco et al. allegedly teaches putting a fiber through a sieve separator (2:12-16) and it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the sieve separation step of Marco et al. in the process of Horacek, and the motivation to do so would have been, as Marco et al. suggests, to obtain fibers of the desired size (2:16-17). Horacek and Marco et al. are combinable as they are concerned with the same technical difficulty, namely the manufacture of fibers.

The rejection further acknowledges that Horacek does not teach extracting the dispersion agent. However, Yagi et al. allegedly teaches extracting a plasticizer/dispersion agent with low boiling hydrocarbons (11:10- 20). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the extraction step of Yagi et al. in the process of Horacek, and the motivation to do so would have been, as Yagi et al. suggests, to create a product of high tensile strength (3:47-60).

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

Similarly as discussed above with respect to claim 25, the teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that

commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

The teachings of Dorries et al., Goldsworthy et al. further in view of Yagi et al., Getchell et al. and Marco et al., taken alone or in combination with Horacek, do not remedy this deficiency.

Therefore, Applicants respectfully request that the §103(a) rejection of claim 43 be reconsidered and withdrawn.

Claim 44 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Horacek (U.S. 5,206,066) as applied to claim 33 above, and further in view of Goldsworthy et al. Composites, Fabrication. With respect to claim 44, Horacek allegedly teaches the composition of claim 33 as stated above, but does not teach making a product as claimed from the composition. However, Goldsworthy et al. allegedly teaches making a foamed container from a composite material (Section 3.6.3). Horacek and Goldsworthy et al. are combinable as they are concerned with the same field of endeavor, namely composite production. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have made a container from the composition of Horacek as in Goldsworthy et al. and the motivation to do so would have been, as Goldsworthy suggests, giving an insulated container for transportation (Section 3.6.3).

Applicants respectfully traverse the §103(a) rejection and request that the rejection be reconsidered and withdrawn.

Horacek teaches a molar ratio of melamine:formaldehyde:alkanol of: 1: (5-6) : (4-6) (see claim 1 and column 1, lines 45-49, 56-63). Claim 44 depends indirectly from claim 22. In contrast to the teachings of Horacek, claim 22 of the present application, has a ratio of melamine:formaldehyde of 1 : 2.5 to 1 : 3.5 (see claim 22 and page 17, second paragraph of the description). Example 1 of the instant application teaches a ratio of melamine:formaldehyde:methanol of 1 : 3.5 : 14. Example 2 of the present application shows a relation of aminotriazine:aldehyde of 1:3. These molar ratios fall outside of the ranges given in Horacek.

The teachings of Horacek make it clear for the person skilled in the art that the melamine resins of Horacek are resins of low degree of crosslinking and polymerization. For example, Horacek states that commercial resins consist mainly of monomeric units, with small amounts of dimers and trimers (column 2, lines 23 to 25).

The description given in Horacek, column 4, implies that the degree of polymerization of the etherified resins is between 1.6 and 2.9. This in turn makes clear to the person skilled in the art that upon further reaction of the resins of Horacek with diols, the resultant reaction products comprise a lesser number of triazine moieties than the 20 to 1000 nuclei triazine ethers claimed in claim 22. This also follows from the use of the resins of Horacek for liquid impregnation, i.e. dipping or spraying (see column 3, line 27 to 36).

Another distinct difference can also be seen in the process of manufacture of the resins of the instant invention. Whereas Horacek only teaches to add etherified resins to diols and to slightly raise the temperature, the process of the instant invention adds a pre-condensation step in the extruder compartment. This last process step leads to the condensation of a far greater number of triazine nuclei than in the case of the Horacek process.

Therefore, Applicants respectfully request that the §103(a) rejection of claim 44 be reconsidered and withdrawn.

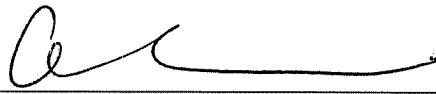
Application No. 10/517,864
Amdt. Date: January 22, 2008
In Reply to Office Action of August 22, 2007
Attorney Docket No. 4385-045796

Reconsideration of the objection and rejections and allowance of the pending claims is respectfully requested.

Respectfully submitted,

THE WEBB LAW FIRM

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By  _____

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